Space Weather Forecast

Issued on Tuesday, 25 October 2022 at 13:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of R1 Radio blackouts. G1/Minor Storms possible on 28 October.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, with two common-class flares from a semi complex sunspot in the southwest quadrant. The previously active sunspot in south centre disk is now fading. The new region close the northeast limb appears to be a weak returning feature, and despite currently appearing benign, will be monitored for further developments and activity. No Earth-directed coronal mass ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of a gradual exit from the high speed stream of a negative coronal hole. Solar wind speeds fell from elevated to slightly elevated. Total magnetic field strength was weak, with the north-south component varying between positively weak and negatively weak. Geomagnetic activity was generally Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low or Very Low with a chance of Moderate-class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections have been observed. The Earth is expected to continue exiting the high speed stream of coronal hole 34 through days 1-3 (25th-27th), with speeds falling to background levels. An increase is then expected early on day 4 (28th) as the Earth connects with the high speed stream of coronal hole 36. Geomagnetic activity is expected to be mainly Quiet with isolated Unsettled intervals days 1-3 (25th-27th). Day 4 (28th) will see a chance of Active or G1/Minor Storm intervals, as the Earth connects with the high speed stream of coronal hole 36.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	15	20	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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